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TURKEY RAISING



THE BUSINESS OF TURKEY RAISING, where conditions are suitable, is quite profitable. It is usually carried on as a side line on general farms, though in some parts of the United States it constitutes the chief source of revenue from farming operations.

As compared with 20 years ago the number of turkeys now raised annually in the United States is much less. This decline seems to have been more marked with respect to turkey raising on the general farm rather than as a commercial enterprise. Several reasons may be attributed for the decline in numbers, but it is generally admitted that practically all the obstacles to success can be overcome.

One of the outstanding reasons why turkey raising has not been developed more extensively in recent years has been a failure to appreciate the value of the industry in supplying the Nation with one of its most popular articles of diet. There has been a general lack of interest in turkey raising as an enterprise; there has been a dearth of knowledge as to the best methods in the management of the breeding stock, particularly the growing stock; there has been little investigational work in the control of disease and other matters of primary importance in producing turkey meat at a profit.

This bulletin has been prepared primarily to bring to the attention of those interested in turkey raising some information which may be of value in improving conditions and thus give rise to more satisfactory results.

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TURKEY RAISING.

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THE TURKEY INDUSTRY OF THE UNITED STATES.

TURKEY RAISING in the United States has long been an important enterprise because of the great quantities of turkey meat required annually. Since there is always likely to be a keen demand for such a popular article of diet, it is desirable to encourage the raising of turkeys in adequate numbers. Steps must also be taken to make turkey raising more profitable, for the recent decline in the number raised annually is due to certain outstanding difficulties, the nature of which is discussed later.

Turkey raising is a very adaptable enterprise, since these fowls are being raised in practically all parts of the United States. The more important sections of production are the Middle Western and Southwestern States. In these States an enormous number of small flocks is raised annually on the grain farms and there are also many large commercial flocks. The census of 1920, the latest figures available, shows the six leading States in production of turkeys to be Texas, Missouri, Oklahoma, California, Kentucky, and Virginia. Formerly large numbers were raised in New England, but in recent years there has been a decided decrease. There have been decreases in other parts of the country as well, and this has resulted in a marked decrease in the number raised in the country as a whole. According to the census of 1900, there were on farms in the United States 6,594,695 turkeys; in 1910 there were 3,688,708; and in 1920 there were 3,627,028. Although the census enumerations were taken at different times of the year, the totals are fairly representative of the trend in numbers.

Several causes have been assigned for the decrease in the number raised. The rearing of the young stock, in some respects at least,

requires more detailed attention than is the case with most other classes of poultry. The prevalence of blackhead has been a dominant factor. The birds range widely and frequently trespass upon the property of neighbors, the vexation tending to discourage turkey raising. Finally, little attention has been given the more important problems of the industry by investigators and others interested.

On the other hand, there is good opportunity for further development. Turkey raising is profitable, particularly where conditions are suitable and proper methods of management are followed. Turkeys can be raised successfully under very simple conditions, so that the capital outlay in the enterprise is quite small. Except during the growing season, the management of the flock is a fairly simple matter. Of course, considerable care must be exercised in maintaining constitutional vigor in the breeding stock: the flock must be

kept relatively free from disease; and the soil, especially where the poults are fed, must be kept sanitary. But these factors can be dealt with when proper care is exercised. Moreover, turkeys are inclined to range freely, and in doing so they destroy many injurious insects and pick up much waste grain. This reduces the costs of raising and increases the profits. Prices for live and dressed turkeys have always been considerably higher than those for other classes of poultry.



FIG. 1.—Bronze turkey, male.

VARIETIES.

All domestic varieties have descended from wild stocks, comprising

four varieties: the eastern wild turkey, which ranged over the eastern part of the United States from Maine to Florida; the Florida wild turkey, which ranged over southern Florida; the Rio Grande wild turkey, which ranged over southern Texas and northwestern Mexico; and the Mexican wild turkey, which ranged over Arizona, western New Mexico, southern Colorado, and Mexico. It is probable, however, that these four wild varieties were of common origin and that most of our domesticated varieties, especially the Bronze, have descended from the Mexican wild variety.

There are six varieties of domestic turkeys. These are recognized as standard varieties by the American Poultry Association, an as-

sociation which has as its primary function the promotion of standard qualities in all breeds and varieties of poultry in America. The association publishes the "Standard of Perfection," which contains a concise description of breeds and varieties of poultry and numerous illustrations of the more important. Following is a brief description of each of the six varieties, which include the Bronze, White Holland, Bourbon Red, Black, Narragansett, and Slate.

THE BRONZE.

In color the Bronze male (fig. 1) is distinguished by the rich, brilliant copperish sheen of plumage in neck, wing bows and wing coverts, breast, back, body, and fluff, against a background of black and brown. The white barring of the wings and the wide, pure-white edging of the main tail feathers and tail coverts make a strong contrast to the body color. The body color blends into an equally dark fluff with a wide, brilliant bronze band extending across it and tipped with a narrow edging of white. The lighter, more brilliant bronze barring of the feathers of the neck, breast, wing bows, and wing coverts terminates in a narrow black band or bar extending across the end of each feather.



FIG. 2.—Bronze turkey hen.

The plumage of the female (fig. 2) is similar to that of the male, except for an edging of white on the black bars in these sections and in the feathers of the back. This white edging is narrow in the front of the body and gradually widens as it approaches the rear. Both sexes have the same color pattern in the main tail feathers and coverts, with brown barring on a dull black background. Each main tail feather and covert has a wide black and bronze band near its end and terminates in a wide, white edging. Creaminess, yellow, or yellowish brown in the pure white edging of the main tail feathers and coverts of the Bronze indicates an admixture of wild-turkey blood.

THE WHITE HOLLAND.

The White Holland (fig. 3) probably originated as a "sport" from the Bronze or the wild turkey. Its plumage should be pure white in color and free from black flecking or ticking in all sections. The shanks and toes in this variety vary from white to pinkish white.

THE BOURBON RED.

The Bourbon Red (fig. 4) is a rich, deep brownish red in all sections except the primaries and secondaries of the wings and the main tail feathers, which should be pure white. More than one-fourth red in the wings or tail constitutes a standard disqualification in this variety. The rich reddish color is rather difficult to obtain without some black, and this black ticking or flecking is a rather common fault. A faded red approaching buff is also undesirable. The color of the female is similar to that of the male, but as in the other parti-colored breeds, the female is slightly lighter in color and has a narrow edging of white on breast, body, and thighs.

THE BLACK.

The Black turkey (fig. 5), known in England as the Norfolk turkey, has solid black color with a lustrous greenish-black surface in all sections. Objectionable white tipping in the feathers of young turkeys of this variety often disappear after the first molt.

Any variation from the solid black color, whether in brown or bronze shading, should be carefully avoided in breeding this variety.

THE NARRAGANSETT.

The Narragansett turkey (fig. 6) has a general resemblance in color pattern to the Bronze, but in contrast to the bronze barring narrowly edged with black, the Narragansett has

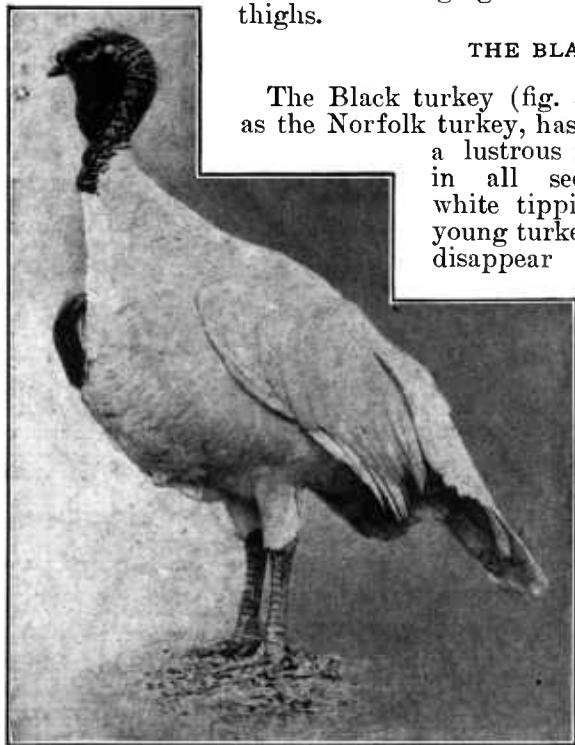


FIG. 3.—White Holland turkey, male.

metallic black and light steel-gray edging and barring. It has a dark background of metallic black and a broad white edging, showing more black in its edging as the body is approached. The general effect is much lighter in the Narragansett, however, on account of the whiteness or steel-gray color in the black body plumage, the white wing band, and white edging of main tail feathers and coverts. In all these sections the light steel-gray or white edging terminates in a black band.

The female plumage is similar to that of the male in this variety, although it shows more whiteness or light steel-gray color in the back, and the ends of the feathers in other sections terminate in an

edging of light gray, approaching white. In the female, as in the male, the primaries and secondaries are evenly and distinctly barred with black and white or light gray. The female in general presents a lighter appearance than the male. There should be a rich metallic black but no bronze barring in the females. The offspring of a Narragansett mating, however, sometimes show bronze color, but such birds should not be bred.

THE SLATE.

The Slate turkey (fig. 7) has an ashy-blue or slaty-colored plumage, sometimes dotted with tiny black spots. The less of this black the better, and any other foreign color, such as white, buff, or red, is undesirable. This variety does not breed very true to color and many of the offspring show both solid white and black as well as black and white ticking and splashing. This variety has dark lead or slaty-blue shanks and toes.



FIG. 4.—Bourbon Red turkey, male.

STANDARD WEIGHTS OF TURKEYS.

Until the sex can be distinguished the young of domestic turkeys are called "poults"; thereafter, up to 1 year of age, young birds are called cockerels and pullets. Birds over 1 year old are called cocks and hens.

The standard weights of the different varieties of turkeys as given in the Standard of Perfection are as follows:

Standard weights of turkeys at various ages.

Variety.	Adult cock (2 years old or over).	Yearling cock (1 year old and less than 2).	Cockerel (less than 1 year old).	Hen (1 year old or over).	Pullet (less than 1 year old).
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Bronze.....	36	33	25	20	16
Bourbon Red.....	30	25	20	18	14
Narragansett.....	30	25	20	18	14
White Holland.....	28	24	20	18	14
Black.....	27	22	18	18	12
Slate.....	27	22	18	18	12

SELECTING BREEDING STOCK.

The Bronze turkey is the heaviest and is probably more popular throughout the country than the other varieties. Since turkeys are sold by weight, the heaviest birds bring the largest returns. Regarding other characteristics, it is quite generally asserted that the Bronze is the hardiest variety, that the Bourbon Red and White Holland are the most domestic, and that the White Holland is the most prolific. These qualities are possessed in different degrees by individuals of every variety, however, and can be developed by proper management and careful selection of breeding stock.



FIG. 5.—Black turkey, male.

The most satisfactory time of the year to select breeding stock is in November or December, especially before large numbers are sold for the Thanksgiving and Christmas markets. Selecting birds early in the season gives one a choice from a larger number, and, more important still, the best-developed birds can be saved for breeding instead of being marketed. New blood may be introduced into the flock or a start may be made with turkeys by purchasing hatching eggs instead of purchasing breeding stock. The purchasing of breeding stock, however, is recommended.

Turkeys are raised for meat rather than for egg production. The breeders should possess bodies well adapted for meat production. This means that they should have good, large frames. The back should be broad, especially at the shoulders, and the breadth should be carried well back toward the tail. The body should be deep, with a full, well-rounded breast. Other points of importance include a full, bright eye, a broad head, stout legs set well apart and not too long. Above all else, be sure to select vigorous birds. This is of paramount importance and should never be overlooked.

Select or build up a flock of purebred turkeys, for they are more profitable than mongrels or crossbreds. Also, it is eminently desirable to maintain the flock up to standard qualities as far as possible. It costs no more to raise purebred stock than crossbreds or mongrels and the purebreds are usually heavier and command higher market prices. Then, again, where good standard qualities

in respect to shape and color are maintained some of the birds can be sold for breeding purposes at increased prices.

MANAGEMENT OF BREEDING STOCK.

Results in turkey raising depend to a very large extent on the kind of breeding stock that is used each year, and the manner in which it is managed. The breeding stock is the foundation of the turkey industry and the greatest care must be exercised in selecting both male and female breeders. Failure in this respect has undoubtedly been one of the principal reasons why satisfactory results have not been obtained on many farms and commercial plants. One of the first steps in improving conditions, therefore, is more careful selection of the breeding stock.

PROTECTION FROM WEATHER.

Under ordinary conditions turkeys do not require much protection from the weather. However, during cold winter weather such as prevails in the Northern States, it is well to provide covered roosting sheds. In most parts of the United States there is little need for a regular turkey house, but during damp and cold or stormy weather the turkeys should be given protection of some kind. They should not be exposed to dampness, but they can stand a reasonable degree of dry cold.



FIG. 6.—Narragansett turkey, male.

BREEDING PENS OR INCLOSURES.

It is the usual custom to allow the breeding flock free range throughout the breeding and laying season. (Fig. 8.) This seems to give the most satisfactory results, provided the nests are located so that the eggs can be gathered daily. On the other hand, if the breeding stock comprises quite a number of turkeys, it is advisable to use breeding pens or inclosures. (Fig. 9.) These, of course, should be of sufficient size to afford plenty of exercise, a flock of 15 birds requiring about 1 acre. The breeding pen need be only a very simple affair. Frequently the orchard serves this purpose very satis-

factorily. A hog-proof fence about 4 feet high is enough to confine the turkeys; they are not inclined to fly over the fence, because they can not rest on the top wire. If board or rail fences are used, they will have to be of fairly good height with strands of wire run above the top to prevent the turkeys from perching on the fence. Where turkeys persist in flying over any kind of fence the flight feathers of one wing may be cut; or a small piece of light board may be fastened across the back by notching the board and tying it with a strip of cloth to each wing (fig. 10), so that when the wings are

raised they strike against the board and prevent flying.



FIG. 7.—Slate turkey, male.

FEEDING THE BREEDING STOCK.

Feeding the breeding stock is a simple matter. It is important to keep the breeders in good condition, however, and they should be well fed but not overfed. Where turkeys have plenty of free range they should obtain an ample supply of insects, green feed, and seeds; but it is also advisable to give them a daily feed of grain, such as a ration of equal parts of oats, wheat, and corn. Considerable care should be taken to see that the grain fed is clean and wholesome, particularly the corn.

During the cold winter months, especially in the northern part of the country, it may be necessary to feed grain twice a day. It is also well to provide the birds with vegetables, such as potatoes, turnips, mangels, or cabbage as a substitute for green feed. In addition, some kind of animal food is necessary for best results, and this can be supplied in the form of beef scraps, beef livers, or skim milk, either sweet or sour. Feed regularly and be careful not to overfeed, especially corn, and change the place of feeding frequently. The breeders should also have liberal supplies of grit, charcoal, and oyster shell.

MATING.

Best results from the standpoint of mating are obtained when about 15 females are mated to a healthy, vigorous "tom," or male bird. If more hens are kept more males should be used, but great

care should be taken not to allow two toms to run together. When from 25 to 50 hens are kept the toms used should be alternated every other day. The proportion of hens to one tom used in mating gives a good idea of the relative importance of the male bird. His selection from the standpoint of type and constitutional vigor is a very important matter, although the females should also be kept up to standard as far as possible. The aim should be, in making up a breeding pen, to choose birds of standard weight. (See table on p. 5.)

Concerning the age of the birds to be used as breeders, most breeders prefer to mate a vigorous, well-grown tom (cockerel) with yearling hens or sometimes with early hatched pullets. If pullets are used they should be well matured, as there is great danger of lowering the vitality of the stock by using immature birds. Yearling and older toms can be used if desired, but sometimes there is danger of their excessive weight causing injury. At any rate, if a yearling or older tom is used, his spurs and nails should be trimmed. With respect to females, since egg production decreases materially after



FIG. 8.—Breeding flock of Bronze turkeys on free range.

three years, it is advisable to replace 3-year-old females with young birds.

It is not advisable to inbreed turkeys. Inbreeding has been found in many cases to result in a great lowering of the vitality of the stock. It is well to secure new blood by purchasing male stock from an outside source. Great care should be exercised in selecting males from reliable breeders whose stock is first of all healthy and vigorous, approaches standard weight, and possesses other standard qualities to a high degree.

EGG PRODUCTION.

The time when turkeys naturally begin laying depends, of course, upon the section of the country in which they are being raised. Soon after mating begins the female looks for a nesting place, and about 10 days after the first mating she commences laying. Naturally, all the hens do not begin laying at the same time, and in a flock of about 15 the time of commencement may be spread over a period of six weeks. The number of eggs produced per bird depends upon the breeding of the stock as well as upon the management. Under ordi-

nary circumstances, however, the average number of eggs per bird is about 20 in the first litter. Turkeys lay in litters; that is, they will lay about 20 eggs, and then go broody; and after getting over their brooding period they will lay a second or third lot, each subsequent litter containing fewer eggs. Some hens can be made to lay more than three litters. It is not well, however, to try to hatch the eggs of the late litters, as late-hatched turkeys are very rarely profitable.

Where broody chickens can be obtained to incubate the turkey eggs of the first litter, the turkey hen can be broken up from her broodiness and she will immediately begin to lay a second litter. This method of getting the turkey to lay her second litter shortly after the first one is very desirable, as it provides for the hatching of a relatively large number of early turkeys. The early hatched birds are



FIG. 9.—Breeding and laying pen or inclosure; hog-proof wire fence 3 feet in height.

the ones that grow and mature most satisfactorily, and therefore attain the best size for the Thanksgiving and Christmas markets.

Turkeys have not been so completely domesticated as have chickens, and it is natural, therefore, for the turkey hen to seek a secluded place to lay. One must be on the lookout for hidden nests; otherwise eggs may not be collected regularly, and they may become chilled or destroyed by predatory animals. Sometimes the hidden nest can be located by observing the turkey hen carefully as she makes her way to the nest, but a much easier and quicker method is to confine the hens early some morning soon after they come from the roost and then let them out late in the afternoon. The hens that are laying will make straight for their nests in order to lay the eggs they have been holding. Sometimes turkeys will take to nests provided for them, and whenever this is done a great deal of trouble is frequently saved. Nests are easily made of boxes or barrels, which should be so placed as to be protected from animals. (Fig. 11.)

INCUBATING THE EGGS.

There are certain factors in the incubation of turkey eggs which are very important and mean a great deal in determining the number of fully matured pullets and cockerels raised in the fall of the following year. In a large measure the criterion of success in turkey raising is the number of fully matured turkeys raised in proportion to the total number of eggs set. Therefore the eggs as laid must be given the very best attention. High fertility is desirable, and incubation should be carried out in such a way that as many of the eggs as possible will hatch. Naturally, the vigor of the breeding stock and the manner in which it has been managed will determine in large degree the quality of the hatching eggs.

The eggs should be collected regularly every day and kept in a room at a temperature of from 50° to 60° F. They should be turned every day, but should be handled carefully and should not be kept for over two weeks.

The period of incubation of turkey eggs is 28 days, and the method of incubation is much the same as with chicken eggs. Turkey eggs can be incubated under chicken hens, turkey hens, or in incubators.

If chicken hens are used to incubate turkey eggs, care must be taken not to give the hen too many eggs, as from 9 to 12 are quite sufficient, depending upon the size of the hen as well as the size of the eggs. Nesting arrangements as well as other matters are practically the same as in incubating chicken eggs. The sitting hen should be fed daily and given a chance to exercise.

When the turkey hen is allowed to sit on her own eggs, conditions are much the same as with the chicken hen. Turkey hens will cover from 15 to 20 eggs. Nests are most conveniently arranged on the ground or in boxes or barrels and should be covered so that the turkey hens will not be disturbed. (Fig. 12.) At the same time they should be taken off daily and allowed to exercise and should be given plenty of water to drink and clean, wholesome feed, such as a mixture of wheat and oats.

When the turkey hen becomes broody she should be allowed to sit on the nest for two or three days before being intrusted with the eggs. When she has remained consistently on the nest for two or three days she should then be given her eggs and attended to as suggested. If a number of hens are sitting at the same time, care should be taken to see that they get back to the nests properly and that no nest is left uncovered.

Both chicken and turkey hens, while sitting on turkey eggs, should be dusted with sodium fluoride as directed on page 21. This chemical will tend to rid the sitting birds of lice which would otherwise annoy them.

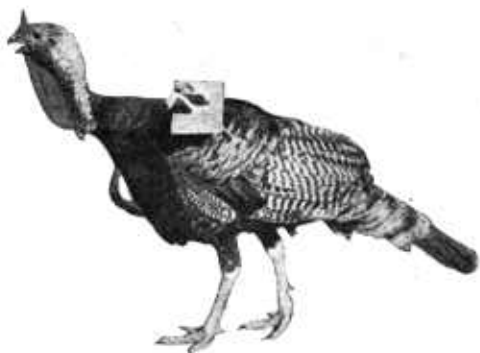


FIG. 10.—Device for preventing turkeys from flying over fence.

The practice is becoming more common of incubating turkey eggs in incubators, the method being much the same as in the incubation of hens' eggs. Several turkey raisers have obtained best results with a temperature of 101° F. The eggs should be turned twice or three times daily and they should be tested on the tenth and twentieth days. On the twenty-seventh day the incubator door should be kept darkened and not disturbed until about the twenty-ninth or thirtieth day, because it is sometimes 30 days before the last poults have hatched.

REARING THE POULTS.

There are few problems in turkey raising so important as brooding and rearing the poults, because the greatest losses in turkey raising occur in about the first five weeks after the poults are hatched. Heavy mortality among the poults is a pretty sure indication that

the breeding stock used was low in vitality or was poorly managed. Improper methods of brooding will do a great deal of harm, of course, because turkeys can not stand any great amount of dampness. They must be kept comfortable and fed properly; otherwise the digestive system may be so affected that disease will gain control.



FIG. 11.—Coop used for turkey hen while sitting.

BROODING.

The poults may be brooded either by chicken or turkey hens or by artificial brooders. Brooding by hens has the advantage of enabling the poults to be raised in small flocks and of readily providing free range conditions. There is a slight disadvantage, however, in that after the hens are allowed to roam with their broods they may wander too far and some of the poults may be lost through storms or by predatory animals. On the other hand, the artificial method of brooding serves to keep down the costs and the poults are more directly under the control of the operator.

Brooding the poults by hens is not a difficult matter, although there are several details which should always receive careful attention. As soon as the hatch is completed and the poults begin to run out from under the sitting hen, the hen and her brood should be transferred to a coop. A coop of simple design, such as the A-shaped (fig. 13), large enough to accommodate either a chicken or turkey hen, and well built to protect the brood against the rains, is all

that is required. Each hen should have a separate coop, and where there are several broods the coops should be placed some distance apart on well-drained soil where the grass is fairly short. For the first day or so it is well to confine the poults in the coop with the mother hen. Then make a small yard, using boards or wire, around the front of the coop and allow the poults to run in and out at will. Exercise is very important, but the young poults should not be allowed to run in long, wet grass, and during a heavy rain they should be confined in the coop. Plenty of exercise is absolutely essential to promote good growth. The coop should be moved to fresh ground every day. When the poults are about a week old the mother hen may be allowed to roam with her brood, but care should be taken to see that the entire brood returns in the evening and is protected for the night from predatory animals. It is especially important that the brood be properly sheltered during rainstorms or damp weather, as nothing is probably so fatal to the poults as dampness and cold. The mother hens usually remain with their broods until about Octo-

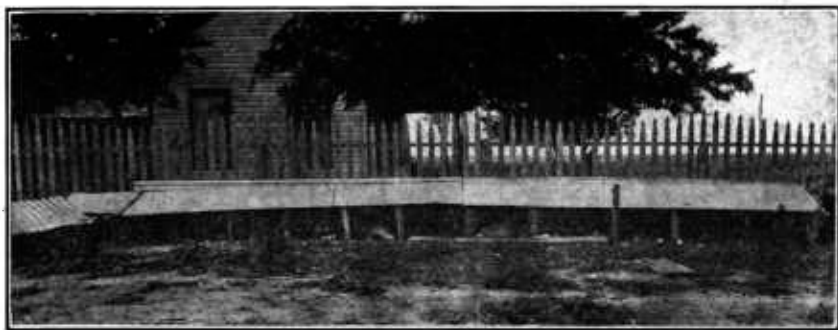


FIG. 12.—Long row of nests used by large turkey raisers for setting turkey hens.

ber, and then the cockerels frequently leave the pullets and the sexes range by themselves.

The practice of brooding poults artificially is becoming more prevalent and in some quarters in particular is quite successful. Naturally, the broods are larger than is the case in brooding by hens. The prevailing custom is to use brooder stoves, which are placed in portable colony houses. The houses are moved frequently, thereby giving the poults plenty of free range on clean soil. The houses must be kept strictly sanitary and should be disinfected regularly. The general conditions of managing the poults are much the same as when hens are used for brooding. One point of great importance, however, in brooding poults artificially is to make sure that they do not crowd together while in the brooder house. This is avoided by keeping an even temperature and providing good ventilation. When the poults are first put in the colony house with the brooder stove the temperature under the hover should be about 98° F. 3 inches above the floor. Depending upon the season, this temperature should be lowered gradually until the poults are about 10 weeks old, when they require but very little heat, especially in the daytime. When the poults become well feathered and are in-

clined to roost at night, the colony house should be used as a roosting shed. Toward the approach of fall the cockerels and pullets will be inclined to roost in trees, or a covered roosting place may be constructed inclosed by a wire fence to keep out predatory animals.

DEVELOPMENT AND SEX.

The poults, when first hatched, are covered with soft down. Very soon, however, wing feathers begin to develop, and at 2 weeks of age they are long enough to cover the back, sides, and rump. When the poults are about 10 days old feathers begin to appear where the

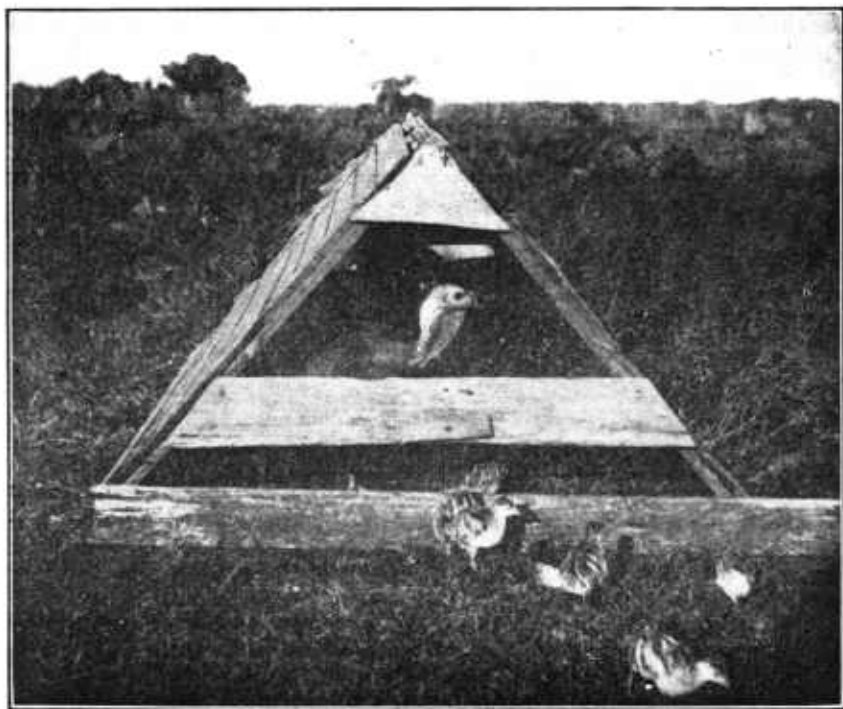


FIG. 13.—Turkey hen confined to a coop: the poults allowed to run in and out. Coop must be constructed so that the hen can not get out.

wings join the body and in about 3 weeks the tail feathers begin to appear. From then on feather growth is quite rapid, and when the poults are 2 months old they are well feathered.

The head and upper part of the neck of mature turkeys is red and is covered with fleshy caruncles. The development of this condition is of some significance in the poults. Up to about 4 weeks of age there is no trace of red on the heads or necks. Then about the fifth week the caruncles begin to appear and by the seventh week they tend to extend down the neck. The appearance of caruncles in the poults is termed "shooting the red," and many turkey raisers believe that if they can raise their poults successfully to this stage there will be little trouble afterwards. On the top of the head in both males and females the fleshy protuberance develops

into what is called the "dew bill," and in males it is larger and more elastic than in females.

The sexes of poults can be distinguished at a relatively early age by the earlier appearance of a tuft of hairs on the breast of males. The appearance of this tuft of feathers is preceded by the growth of a small, fleshy protuberance. The tuft first appears on males when they are between 3 and 4 months old, but it does not appear on the breast of females until they are about 1 year old. Then, again, the hairs of the tuft on males are much longer and coarser than those on females.

Another point of difference between adult males and females is the presence of a spur in males and its absence in females. In cockerels, or toms under 1 year of age, there appears on the inside of each shank a blunt, horny structure. As the birds grow older this develops into a stout spur. In females this horny structure remains only a rudimentary spur.

When turkeys are raised in considerable numbers, it is a good plan to adopt some system of marking them. This enables one to keep track of the different broods according to age and is of assistance in the selection of early hatched birds for subsequent breeding purposes. Also, the poults from special matings may be separated from the rest of the flock or from turkeys belonging to neighbors. The poults may be marked by clipping the toes or by punching holes in the webs between the toes. Different webs may be punched for different broods and in this way an accurate record can be kept of all turkeys raised from different matings. The poults may also be marked by using chick leg bands as in banding baby chicks. When the turkeys approach maturity wing bands may be inserted in the web of the wing, as is now done with chickens, and permanent leg bands may also be used.

FEEDING.

The feeding of the poults is a very important matter, not only from the standpoint of the kinds of feed given but also the manner in which they are fed. Unwholesome feeds and improper methods of feeding, especially where the poults are closely confined, have resulted in many failures in turkey raising. Poults kept under free-range conditions are less liable to suffer from improper methods of feeding. Under good weather conditions and where the range provides an abundance of green feed and insects the growing poults require but little extra feeding. Probably more losses result from overfeeding than all other causes. It is a good practice, however, to feed the poults regularly every night and in a short time they will return nightly to their proper roosting quarters.

While confined to the coop the mother hen should be fed twice a day on a mixture of grain, such as equal parts corn, wheat, and oats, and green feed, while water and grit should be kept before her all the time. An occasional feed of meat scrap or fresh, lean meat is greatly relished and helps to keep her in good condition. In feeding the hen and poults, it is advisable to feed the latter outside the coop and the former inside, in order to prevent her from eating the feed intended for the poults. It is seldom necessary to

keep the hen and poults confined for more than a few days at a time, and the sooner all can be given free range the better. Whether or not they should all be put into the coop at night after ranging during the day depends on the weather and the danger from predatory animals.

For the first two days after hatching, poults require no feed, the yolk of the egg which they absorb before breaking out of the shell being sufficient to maintain them for that length of time. Access to clean drinking water and a little coarse sand and green feed to peck at is all that is needed until the third day. Beginning with the third day, the poults should be fed according to the quantity of natural feed they are able to pick up outside the coop. They should always be kept more or less hungry. Furthermore, the feed should never be allowed to become moldy. Feed the poults on boards; after each feeding clean off any feed that remains and stand the boards in the sun to dry. Overfeeding removes the cause of searching for food, so that little exercise is taken and indigestion is sure to result. When natural feed is scarce, or when the poults have to be kept from ranging outside, they should be fed lightly about five times a day. If allowed to run outside the coop where they can find insects, seeds, and green feed, they need not be fed oftener than two or three times a day.

Several combinations of feeds are used by different turkey raisers. The methods of feeding some of these combinations are briefly as follows:

Hard-boiled egg chopped fine and corn-bread crumbs for the first week, and then whole wheat and hulled oats.

Stale bread soaked in milk and squeezed dry for the first few days, and then common chick feed.

Clabbered milk seasoned with salt and pepper, and corn-bread crumbs.

Equal parts "pinhead" oats, whole wheat, and cracked corn.

Corn meal and wheat bran mixed in the proportion of 3 to 1 and baked into a bread.

Milk, especially buttermilk, is excellent for young poults. Buttermilk seems to be especially beneficial in bringing the poults successfully through the early stages. A good plan is to keep the milk in front of the poults during the morning and water during the afternoon.

If grit and green feed can not be picked up outside the coop, they must be provided in some other way. Chopped onion tops, lettuce leaves, dandelion leaves, and alfalfa make excellent green feed. Grit can be furnished in the form of coarse sand.

During the summer and early fall turkeys can find an abundance of feed on the average farm. Grasshoppers and other insects, weed and grass seeds, green vegetation, berries, and grain picked up in the fields all go to make up the turkey's daily ration. When this natural feed is plentiful very little needs to be added until fattening time, except for the purpose of bringing the turkeys home to roost every night and to keep them from straying from home. For this purpose one feed of grain every night just before roosting time is sufficient.

FATTENING FOR MARKET.

In fattening turkeys for market an excellent plan is to begin about the first of October to feed night and morning, feeding just enough

at a time so that the birds go away still a little hungry, and gradually increasing the quantity until they are given all they will clean up three times a day during the week before marketing. Some turkey raisers feed equal parts of wheat and oats during the first part of the fattening season, gradually changing to corn as the weather becomes cooler. Most raisers, however, begin feeding heavily on corn about November 1, and since turkeys are not accustomed to such heavy feeding, scours often result, especially if new corn is used. Old corn is a much better feed than new corn, but the old corn must be free from mustiness. Nuts of various kinds, such as chestnuts, beechnuts, and acorns, are frequently available, and these make good fattening feeds. Best results in fattening are obtained when a grain ration of oats, wheat, and corn is provided.

Confining turkeys during the fattening season to prevent their using so much energy in ranging has been tried to some extent, but with little success. Those confined to a pen eat heartily for two or



FIG. 14.—Driving turkeys to market (Glasgow, Ky.).

three days but afterwards lose their appetite and begin to lose flesh rapidly. On allowing them free range again, they pick up rapidly and are soon eating as heartily as ever. The better method is to allow them a certain amount of range, as it keeps them in good, healthy condition, and they are always eager to be fed.

MARKETING.

The marketing season for turkeys is very short, running from the middle of November to the latter part of December. Many turkey raisers sell their birds alive to poultry dealers, who either dress them or ship them alive to city dealers.

In sections where turkeys are grown in large numbers, as in Texas, dressing plants have been built by poultry dealers, who buy the birds alive and dress them for the various city markets. In such cases practically all the turkey raisers sell to these dealers, who often send buyers into the country to gather up a drove of several hundred birds by stopping at each farm as they pass, weighing whatever turkeys the farmer may have to sell, and adding them to those already collected. Six or eight men can drive a

flock of 1,000 turkeys 10 to 12 miles a day. (Fig. 14.) As soon as possible after the turkeys are received at the dressing plant they are killed, dry-picked, cooled, and packed in barrels or boxes for shipment.

Farmers near the city markets often dress the turkeys and sell them direct either to the consumer or to city dealers. In some sections shortly before Thanksgiving there is held what is known as "turkey day." On the day before this event every turkey grower in the neighborhood kills and dresses his turkeys and the following morning brings them into town, where they are bid on and purchased by the buyers present. (Fig. 15.)



FIG. 15.—Marketing dressed turkeys on "turkey day" (Lisbon, N. Y.).

Before being killed turkeys should be deprived of feed for about 15 hours, but given plenty of fresh, clean water in order to clean the crop and intestines of all feed. When ready to be killed, the birds should be hung up by the feet. The bird's head is held in one hand and a sharp, narrow-bladed knife is used to sever the veins in the throat by making a small cut inside the mouth on the right side of the throat, at the base of the skull. After making this cut and bleeding begins, the knife is thrust up through the groove in the roof of the mouth and into the brain at the back part of the skull. When the brain is pierced, the bird gives a peculiar squawk, the feathers are loosened by a quivering of the muscles, and death is instantaneous. In dry picking the feathers should be plucked immediately, and if the bird has been properly stuck they come out very easily.

The tail and large wing feathers are removed first, after which the body feathers are pulled out.

When the turkeys are to be marketed locally or shipped but a short distance they are cooled to a temperature of about 35° F. by hanging in the open air, provided the weather is cool enough; otherwise they are plunged into ice water and kept there until thoroughly cooled. After cooling they are packed undrawn in boxes, or barrels. There is considerable risk for the producer without proper refrigerating facilities in shipping dressed turkeys long distances, as losses from improper cooling and from their being exposed to warm weather during transit are liable to occur. These losses may be reduced by packing the birds in barrels with cracked ice between layers of turkeys and at each end of the barrel. A top layer of ice placed between two layers of burlap tacked securely over the top of the barrel is desirable. When turkeys are shipped any great distance in carload lots, they are usually cooled to 32° F., packed in boxes or barrels, and shipped in refrigerator cars.

Turkey feathers, when properly prepared, command good prices and are quite valuable. Feathers from birds that have been scalded, however, are hardly marketable, and this is one of the principal reasons why turkeys should be plucked dry. The feathers are used for various purposes, such as feather dusters, feather beds, and pillows. After the turkeys have been plucked, the feathers should be collected and thoroughly aired and dried. Separate the quill feathers from the others; sometimes it pays to separate the white feathers from the colored ones. The animal heat must be allowed to pass out, and the feathers should be quite dry. When they are spread out to dry they should be turned frequently. Be sure all feathers are thoroughly cured and dry before being packed in strong burlap sacks for shipment to market.

DISEASES, AILMENTS, AND PARASITES.

Avoidance of parasites and prevention of disease should be the first aim of every turkey raiser. Good management will keep the flock rid of parasites, and the selection of breeding stock having abundance of constitutional vigor will help materially in preventing disease. Turkeys should always be given the best possible surroundings. Provide free range on clean (sanitary) soil; feed wholesome foods on clean soil; provide plenty of green feed; give the stock good protection from dampness; keep the quarters strictly sanitary at all times; then, finally, breed for more constitutional vigor.

BLACKHEAD.

Of the infectious diseases among turkeys, blackhead is the most destructive. This disease first became serious in the New England States many years ago, and it is now found to a greater or less extent throughout most parts of the United States. Blackhead occasionally affects adult turkeys, but it occurs principally among young turkeys between the ages of 6 weeks and 4 months.

The symptoms are such that unless the bird is killed and an examination of the internal organs made it is difficult to tell whether the disease is blackhead or some other ailment. The head of the turkey sometimes turns dark, and it is from this symptom that the

name blackhead originated; this is an unfortunate term, as the head often does not turn dark, and even though it does it merely indicates that the bird is sick from some ailment that may or may not be blackhead. The bird drinks a great deal, but refuses to eat and grows steadily weaker until its death, which usually occurs a few days or a week after the sickness is first noted. Diarrhea commonly occurs and the droppings vary in color from white to brown, but are usually a bright yellow. On opening a turkey that has died of blackhead, one or both of the ceca or "blind guts" are found to be enlarged and plugged with a cheesy material and the liver is more or less covered with spots varying in color from grayish-white to yellow.

Apparently no positive cure for blackhead has been found. As in the case of all other infectious diseases, to prevent further spread of the disease, the sick bird should be removed from the flock immediately and if very sick should be killed and the body burned. Clean out the roosting place and spread lime in places most frequented by the turkeys. Keep a disinfectant in the drinking water; potassium permanganate is most often used, a sufficient quantity of the crystals being added to give the water a wine color, which, for every gallon of water, will take about as much of the chemical as can be placed on a dime. If the turkeys are being fed heavily, their ration should be reduced, as overfeeding predisposes to the disease. The feeding of sour milk has been found of advantage in keeping turkeys in good health and in reducing the activities of the organism causing blackhead. Free range and care not to overfeed are most important.

By all means possible prevent the introduction of blackhead into the flock, but if it once gets into the flock then do everything possible to prevent its spread. Several measures of prevention may always be taken as a precaution, the chief of which are: Obtaining eggs from flocks believed to be healthy; disinfecting the eggs to be incubated with a cloth soaked in an 85 per cent solution of alcohol; keeping the poults on ground at a distance from all other fowls; excluding, as far as possible, pigeons, sparrows, and other animals from the turkey houses and yards; frequent disinfection of houses, feed troughs, and all equipment; the immediate killing and burning of all affected birds.

ROUP.

Turkeys are sometimes affected by roup, a disease very common among chickens, particularly when they are exposed to drafts and dampness. The first symptoms of roup are those of a common cold; later a swelling usually develops just below the eyes, giving rise to the name "swell head." Roup is very contagious, and any infected bird should be isolated and the mouth and nostrils washed out with an antiseptic. If there is a swelling under the eyes, it should be opened and the material that has formed there squeezed out; also, the cavity should be washed with an antiseptic. Hydrogen peroxid used without dilution is good for this purpose.

In most cases it is advisable to kill any bird sick with anything of a contagious or infectious nature rather than to attempt treatment and run the risk of spreading the disease. All birds killed should be burned.

CHICKEN POX.

Chicken pox (sore head) is quite often found among turkeys, particularly when they are raised with fowls. It is characterized by scabby eruptions about the head and spreads quite rapidly from one bird to another. The affected birds should be removed from the flock, the scabs soaked off with warm water, and the sores painted with iodine or washed with an antiseptic such as a 2 per cent solution of carbolic acid or of potassium permanganate. Treatment with Lugol's solution, followed by an application of powdered iodine, is very effective. Watch carefully for any sores appearing on the heads of the turkeys and isolate and treat such birds immediately. Then go over the rest of the flock; rub Lugol's solution over the head and upper part of the neck of every bird and next apply powdered iodine. There should be no further trouble, particularly if the affected birds are not returned to the flock until completely cured.

LIMBERNECK.

Limberneck is characterized by a paralysis of the muscles of the neck, caused by the absorption of poison from the intestines. The presence of these poisons is usually due to eating decayed meat or moldy grain, or it may be attributed to indigestion or intestinal worms. A tablespoonful of castor oil to which 15 drops of oil of turpentine have been added should be administered.

IMPACTION OF THE CROP.

Impaction of the crop is caused by eating indigestible substances, such as feathers or dry grass, and thus preventing free passage of the feed. The crop can usually be emptied by first giving a teaspoonful of sweet oil and then working the contents of the crop with the fingers up through the gullet and out of the mouth, the bird being held with its head down.

LICE.

Lice are among the most important causes of the high mortality among young poults, those badly infested becoming gradually weaker and weaker until they die. Head lice cause most of the trouble and are found close to the skin under the top of the head, above and in front of the eyes, and under the throat. Small white lice are also found along the wing bar, among the quills of the feathers and occasionally are found below the vent. By applying an insect powder, such as sodium fluoride, when the hen is set, it is a very easy matter to prevent lice from getting a start among the poults. If this is not done the poults are almost certain to have lice. The sodium fluoride should be applied among the feathers next to the skin, one pinch on the head, one on the neck, two on the back, one on the breast, one below the vent, one at the base of the tail, one on each thigh, and one scattered on the underside of each wing when spread. The poults should be examined carefully every few days, and if lice are found about the head a small quantity of lard should be rubbed over the affected parts. This kills the lice by closing their breathing pores. Sodium fluoride should also be used on the poults if body lice are found, but should not be applied until the poults are at least a week old, and then only two very small pinches should be used. One of these should be distributed on the neck, top of head, and throat, and

the other on the back and below the vent. Every precaution should be taken to keep down lice, especially on poults, because they cause enormous losses if not kept in control.

WORMS.

Turkeys are frequently troubled with worms. The irritation of the intestinal wall caused by worms may give rise to disease. There are principally two kinds of worms that infest turkeys, the roundworm and the cecum worm. Both are difficult to get rid of, but clean soil and regular disinfecting will help to keep them down.

It is a good plan to give the turkeys a light feeding of sulphur mixed with the moist mash. This will tend to keep down worms and help to keep the turkeys in good health. Another good plan is to put tobacco dust in the mash, to the extent of about 2 per cent of the dry mash. Where birds are badly infected a common method of treating is to give 2 grains of santonin to each bird. Dissolve the santonin in water and use to mix the wet mash.

SUMMARY.

To be successful in turkey raising, one must give the most careful consideration to certain fundamental factors. The turkeys, especially the growing stock, must be kept under the best possible conditions.

Free range seems indispensable, although there are a few who have made a success in raising turkeys in confinement. A more thorough test of this method is necessary, however, before it can be advocated. Certainly abundance of free range on clean soil is greatly to be preferred. Every effort should be made to keep the soil sweet and clean. This is particularly true of the soil on which the birds are fed and where they roost.

Another fundamental essential is to keep healthy and vigorous breeding stock in the best possible breeding condition. The breeders should get plenty of exercise and should not be fed too heavily on fattening rations. The great difficulty is to get stock that is free from blackhead, but one can at least select breeding stock based on constitutional vigor. By breeding from the most vigorous birds every year, a flock of healthy stock may be developed and maintained. Certainly much more care should be exercised in the selection of male breeders each year.

Both old and young turkeys should be protected from dampness. In sections of the country where dampness is prevalent or where rainstorms are frequent the birds should be provided with suitable protection.

It is very important not to feed the poults too heavily, especially for the first few weeks. Keep them just a little hungry.

Watch the poults carefully for the appearance of lice and take every precaution to keep them in check. Disinfect the brooding quarters regularly as well as the poults and examine them from time to time to see that they are not suffering from the pernicious lice, which sap their vitality to a large extent.

As far as possible remove the cause of any disease that might appear. Clean soil, sanitary quarters, and hygienic methods of feeding will do much to reduce mortality. Success in turkey raising is largely a question of proper management.